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Why do entities get involved in proliferation? exploring the criminology of illicit WMD-related trade

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This article seeks to provide an original approach to WMD-related illicit trade by drawing on criminology and focusing on the transactional level. Specifically, the article discusses the "rational choice" model as a way to understand an entity's involvement in illicit trade, and considers also the limitations to this approach, as well as the role that opportunity plays in an actor's decision to engage in illicit trade. The article draws the conclusion that prospects for deterring illicit trade using export controls and related criminal sanctions are limited. Beyond the clear limitations of rational-choice model, the prospects for deterring illicit WMD trade are limited by the low levels of certainty in export-control enforcement, something that the criminology literature suggests is of greater importance than severity of punishment in deterring crime. Nonproliferation successes are more likely to be found in further efforts to develop tools to address proliferation opportunities, an area which has already seen much work. Efforts to further raise illicit WMD-related trade from the realms of "invisible crime" are necessary, including further conceptual research on illicit trade.

Keywords: nonproliferation; proliferation procurement; illicit trade; crime; white collar crime; export controls; enforcement; United Nations Security Council Resolution 1540; criminology.

Individuals and entities from the private sector have long contributed to the proliferation of weapons of mass destruction (WMD), acting as suppliers, middlemen, financiers, and shippers in proliferation-related transactions. Over the past decades, trade in WMD-related goods has become increasingly regulated, and illicit trade increasingly criminalized. Despite the clear role that these actors have played in recent proliferation cases, the literature on proliferation behavior has largely continued to focus on the state level. This article seeks to expand the existing literature by considering insights that can be generated by looking at illicit WMD-related trade as crime. It focuses on proliferation-related illicit trade at the transactional level: what causes manufacturers, suppliers, and middlemen to become involved in illicit trade?

The article is structured in four main parts. The first summarizes the role of these actors in proliferation and then considers the intersection—both in practice and the academic literature—between proliferation and crime. In the second, third, and fourth sections, the article draws on criminology's "rational choice" model, exploring its limitations as well as another criminology theory that focuses on the role of opportunity in causation.[1] This discussion demonstrates that the literatures on business and crime can yield insights relevant for nonproliferation. Overall, the article concludes that while significant challenges remain in deterring proliferators from

[1] The term "proliferator" is used throughout to refer to individuals and entities involved in illicit trade in WMD- or missile-relevant goods, rather than proliferating states.

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involvement in illicit trade, raising awareness within industry and a greater role for Situational Crime Prevention are important measures to prevent future proliferation.

The criminalization of involvement in WMD proliferation

Diverse states have utilized the international marketplace to source goods for their nuclear, chemical, and biological-weapons programs and their means of delivery. The dual-use nature of many WMD-related technologies has meant that even the earliest programs drew on manufacturing capabilities and expertise from producers of goods for civilian use. Over recent decades, the manufacturing base for many of these items has expanded as manufacturing capabilities spread. The development of the nonproliferation regime led to increased restrictions on the acquisition and supply of these technologies, forcing proliferating states to utilize illicit procurement techniques. While Iranian and North Korean illicit procurement efforts have received much recent attention, a wide range of states have drawn on the international marketplace and utilized illicit procurement methods for their WMD programs.[2]

The actors involved in these illicit procurement efforts are diverse in type and role, as well as in their relationship to the goods being sought. They range in size from large multinational corporations to small enterprises and include manufacturers, distributors, middlemen, and brokers, as well as actors that facilitate proliferation but who, in practice, never handle the goods being procured, such as financial institutions, insurers, and shipping agents. Proliferators cover the spectrum, from private-sector enterprises to state-owned companies, some engaged in legitimate business in addition to their illegal procurement activities. They also include individual procurement agents working directly for state programs, although these entities are not the focus of this article.

[2] For example, a list of proliferating states that have used illicit procurement to develop nuclear programs includes, but is not limited to, China, India, Iran, Iraq, Israel, Libya, North Korea, Pakistan, South Africa, the Soviet Union, and Syria.

The goods that these actors provide are also diverse. This article focuses on actors dealing in technologies and equipment that would be used to produce material for nuclear weapons—rather than nuclear material itself—as well as technologies and equipment needed for chemical and biological weapons and their means of delivery. The illicit trade in turnkey manufacturing capabilities and the complete technical information package needed to construct such facilities — such as uranium enrichment plants or missile-production capabilities—has decreased. Rather, proliferators are more actively engaged in procuring constituent parts and the technologies and raw materials needed to produce them. These strategic goods are not usually supplied by the large defense, nuclear, and aerospace companies that often have substantial Internal Compliance Programs (ICPs) in place, but rather by firms in their supply chains, including smaller manufacturers and distributors. For the latter firms, however, establishing programs to ensure that their goods do not end up in a WMD program can be especially burdensome financially, given their more limited resources.

Although there is a long history of states seeking to prevent illicit trade and punish WMD proliferators, in recent years national governments have expanded their criminalization of this conduct, defined here as "the institutionalized process through which certain acts and behaviors are labeled as 'crimes' and 'outlawed.'"[3] This can been seen in a number of respects: in the general appreciation that contributing to a WMD or related missile program constitutes criminal conduct; in the spread of legislation against proliferation at the national level, with associated mandated penalties; and the related evolution of new law-based tools used to counter proliferation and punish those facilitating it.

With regard to the first two points, United Nations Security Council resolution (UNSCR) 1540 (2004) has been instrumental. It provides a broad and sweeping definition of what constitutes assisting a WMD program. In the resolution, the Council:

[3] "Crimes," in turn, are defined as, "certain non-approved acts legislated against and, by due process of the law, punished." Criminalization is said to reflect the state's decisions "to regulate, control, and punish selectively." Katheryn Chadwick and Phil Scraton, "Criminalization," in Eugene McLaughlin and John Muncie, eds. *The SAGE Dictionary of Criminology* (London: SAGE, 2013) p. 102.

> Decides also that all States shall take and enforce effective measures to establish domestic controls to prevent the proliferation of nuclear, chemical, or biological weapons and their means of delivery, including by establishing appropriate controls over related materials and to this end shall: . . .
>
> Establish, develop, review and maintain appropriate effective national export and trans-shipment controls over such items, including appropriate laws and regulations to control export, transit, trans-shipment and re-export and controls on providing funds and services related to such export and trans-shipment such as financing, and transporting that would contribute to proliferation, as well as establishing end-user controls; and **establishing and enforcing appropriate criminal or civil penalties for violations of such export control laws and regulations…** . [Emphasis added][4]

Thus UNSCR 1540 has created a clear legal requirement that all UN members put in place these laws and declare the facilitation of a WMD program to be a criminal offense. The resolution uses the strong operative phrase "decides" and was passed under Chapter VII of the UN Charter, making it binding on all UN member states. States' efforts to comply with this element of UNSCR 1540 have been mixed, although in general terms significant progress has been made.[5]

During the last two decades, there also has been a broader evolution of law-based counterproliferation tools. The Iranian and North Korean nuclear programs have been important in this respect, especially regarding the development of embargoes and other sanctions focused on various technologies and entities. UN embargoes on Iran and North Korea have prohibited the import and export of a wide range of WMD- and missile-related technologies and subjected individuals and entities closely associated with the sanctioned programs to travel bans and asset freezes. UN members have an obligation to enforce these measures at the national level.

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[4] UN Security Council 1540, S/RES/1540, OP 3, April 28, 2004, <www.un.org/en/ga/search/view_doc.asp?symbol=S/RES/1540(2004)>.

[5] See website of the Security Council Committee established pursuant to resolution 1540 (2004), "National Implementation," undated, <www.un.org/en/sc/1540/resolutions-committee-reports-and-SC-briefings/security-council-resolutions.shtml>.

Other sanctions were put in place at the national and regional levels—first and foremost by the United States, but also by the European Union and others. In the Iranian case, many of these were sectoral, seeking to weaken various elements of the Iranian economy to coerce Iran to take part in negotiations on restricting its nuclear program. Other elements of national and international sanctions were more focused, preventing trade with specific entities with links to the Iranian nuclear and missile programs. US sanctions used to counter Iran's nuclear program included vastly expanded "extraterritorial" elements, applicable to foreign nationals or organizations with few connections to the United States.[6] US, UN and EU sanctions on Iran were rolled back as part of the implementation of the JCPOA.[7]

The aggressive expansion of North Korea's nuclear and missile testing, particularly over the past two years, has led to a significant expansion of US, UN and other unilateral sanctions. These have been expanding to cover new business areas, to further pressure the Kim regime and also deny the proceeds from benefiting North Korea's weapons programs. The US, and even the UN, have targeted a wider range of North Korean activities which are believed to finance the country's weapons programs.[8] Thus, the evolution of the nonproliferation toolset has included the criminalization of a growing list of business activities as part of a complex but patchwork legal landscape aimed at preventing proliferation. The fractured nature of this legal landscape –and

[6] These extraterritorial elements were first seen in the 1990s and expanded dramatically around 2010. Matthias Herdegen, *Principles of International Economic Law* (Oxford: Oxford University Press, 2013), p. 79.

[7] P5+1 and Iran, "See Annex II – Sanctions-related commitments", October 18, 2015 <https://www.state.gov/documents/organization/245320.pdf>.

[8] See for example the recent United Nations Security Council Resolution 2375 which imposes restrictions on sales to North Korea of natural gas and oil and export from North Korea of textiles. UN Security Council 2375, S/RES/2375, September 11, 2017. < https://undocs.org/S/RES/2375(2017)>. Earlier resolutions imposed restrictions on other business activities including and United Nations Security Council Resolution 2371 which imposes a ban on North Korean sales of coal, iron and lead ores, and seafood. UN Security Council 2371, S/RES/2371, August 5, 2017. <https://undocs.org/S/RES/2371(2017) >. A recent US Executive Order authorized sanctions against entities operating in an expended variety of North Korean business sectors including the construction, energy, fishing, information technology, manufacturing, medical, textiles, or transportation industries. White House Office of the Press Secretary, "Presidential Executive Order on Imposing Additional Sanctions with Respect to North Korea", September 21, 2017, <https://www.whitehouse.gov/the-press-office/2017/09/21/presidential-executive-order-imposing-additional-sanctions-respect-north>.

especially its implementation– means that some proliferators are able to operate in some jurisdictions with relative impunity.

Toward a greater understanding of proliferators and illicit trade

Given the increased criminalization of WMD-related activities, however fractured, the criminology literature can provide useful insights. The proliferation literature has tended to focus on the "proliferation behavior" of states or individuals working in bureaucracies of proliferant states, rather than on the role of external individuals and entities in facilitating the process.[9] Some scholars have considered the behavior of individuals trafficking nuclear and radiological materials, which is a much rarer phenomenon than the illegal transfer of dual-use technology and equipment.[10] Much of the literature on the behavior of individuals and entities operating in the latter space has taken the form of detailed case studies, particularly surrounding the extensive network operated in the 1990s and early 2000s by Pakistani nuclear specialist A.Q. Khan, with only a minority of these scratching the surface of individuals' motivations.[11]

Some attempts have been made, however, to consider the decision-making calculus of individuals or companies at the transactional level regarding whether to supply a WMD program or comply with nonproliferation controls barring such supply.[12] Additionally, the different types of actors and the varied levels of their awareness of the true nature of their activities have also been drawn together in a framework known as the "Four I's" typology.[13] This typology considers both non-complicit actors who find themselves involved in proliferation ("innocent" and "ignorant"

[9] See, for example Scott Sagan, "Why Do States Build Nuclear Weapons?: Three Models in Search of a Bomb," *International Security*, Vol. 21, No.3 (Winter 1996 - 1997) pp. 54-86; Jacques Hymans, *Achieving Nuclear Ambitions: Scientists, Politicians and Nuclear Proliferation* (Cambridge, UK: Cambridge University Press, 2012)
[10] See, for example, Lyudmila Zaitseva and Kevin Hand, "Nuclear Smuggling Chains: Suppliers, Intermediaries and End-Users," *American Behavioral Scientist* vol.46, no.6 (February 2003) pp. 822-844.
[11] See for example International Institute for Strategic Studies, *Nuclear Black Markets: A.Q. Khan and the Rise of Proliferation Networks – A Net Assessment* (UK: Routledge, 2005)
[12] See, for example, Ian J. Stewart and Daniel Salisbury, "Non-State Actors as Proliferators: Preventing Their Involvement," *Strategic Trade Review* Vol.2, No.3 (Autumn 2016), pp. 5-26; Daniel Salisbury, "Trade Controls and Non-Proliferation: Compliance Costs, Drivers and Challenges," *Business and Politics,* Vol.15, No.4 (December 2013) pp. 529 -551.
[13] Stewart and Salisbury, "Non-State Actors as Proliferators," p. 14-15.

proliferators[14]) and complicit actors who have knowingly sought out illicit business ("indifferent" and "ideological" proliferators[15]) and are driven in varying degree by financial and ideological incentives. The framework also takes account of individuals and large organizations, different parts of which may hold a greater or lesser understanding of proliferation-related transactions. More recently, a "resilience" framework has emerged to explain how illicit procurement networks change and adapt.[16] However, the criminology literature, which can provide insights into both the factors shaping proliferators' involvement as well as measures to counter this, remains unexplored.

Apart from published case studies and estimated and partial statistics, much of the crime of proliferation remains undocumented. "Visibility" is important if actions are to be recognized as criminal, that is, "They must be witnessed, detected, and/or experienced."[17] In the criminology literature, the terms "hidden" or "invisible" refer to crimes that are largely unrecorded or understudied.[18] Illicit trade shares a number of characteristics presented in a typology of invisible crime, in part because much of it goes undetected. These elements include: no knowledge (i.e., there is little public knowledge that the crime is being committed); no statistics (i.e., the conduct is omitted from official statistics or incorporated on a limited basis);[19] no theory (i.e., as discussed above, little theoretical work has been conducted on illicit WMD-related trade); no politics (i.e.,

[14] "Innocent" proliferators are defined as those who are aware of the rules governing transfers of nuclear-related goods, but "believe that they have done nothing wrong. In fact, they are often unaware that they may have done something wrong until they are alerted by the national authority." "Ignorant" proliferators "do not possess an understanding of the regulations and controls, proliferation risks, and the broader social and political implications of their actions." Ibid.

[15] "Indifferent" proliferators "understand what they have done, and they know it is probably wrong, but do not care." "Ideological" proliferators "clearly understand that their actions are 'wrong' either in a legal or moral sense", but conduct these transactions in order to help ensure the recipient program's success, which they believe is right, and sometimes to counter elements of the nonproliferation regime which they believe is unfair or illegitimate. Ibid.

[16] Aaron Arnold, "A Resilience Framework for Understanding Illicit Nuclear Procurement Networks," *Strategic Trade Review*, Vol.3, No.4 (Spring 2017), pp. 3-23.

[17] Victor Jupp, Pamela Davies and Peter Francis, "The Features of Invisible Crime" in Victor Jupp, Pamela Davies and Peter Francis eds. *Invisible Crimes: Their Victims and Their Regulation* (UK: Palgrave Macmillan, 1999) p. 5.

[18] Victor Jupp, "Hidden Crime." in *The SAGE Dictionary of Criminology*, p. 220.

[19] For example, the US government does not release export control crime statistics. John Shiffman, *Operation Shakespeare: The True Story of an Elite International Sting* (New York: Simon and Schuster, 2015) p. 59.

the crime is not an element of mainstream political debate); and no panic (i.e., the crime is not sensationalized in the media to the point of causing "moral panic" in society).[20]

Several factors contribute to this "relative invisibility" of illicit trade.[21] First, illicit trade and efforts to counter it are often conducted in secret; proliferators operate clandestinely to obscure their activities, while intelligence and enforcement agencies work secretly to uncover them. Second, illicit trade remains relatively invisible because it usually has no obvious victims; the WMD programs such trade supports are most often intended for deterrence, with possible use, a remote contingency. Nonetheless, illicit trade is not necessarily a "victimless crime."[22] Chemical weapons use by the Bashar al-Assad regime in Syria represents a clear example of how industry may contribute to a program that has brought death and suffering to many.[23] Even in such cases, however, the role of illicit trade may not be readily apparent, and those involved, even knowingly, may feel divorced from these potential consequences. Third, discussion of the issue is confined to the relatively small community of nonproliferation experts. These three factors have led to limited interest and "moral panic" from the public.

Despite this lack of scholarly and public attention to illicit trade, the criminology literature can provide useful insights regarding the actions of proliferators to better inform nonproliferation efforts. Two areas of the literature are particularly valuable. The first examines what drives criminal behavior and what acts as a restraint against it. The second considers criminal behavior in relation to business and white-collar crime, a term originally coined by influential US criminologist Edwin Sutherland to refer to crimes committed by "respectable or at least respected

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[20] Victor Jupp, Pamela Davies and Peter Francis, "The Features of Invisible Crime," p. 5. "Moral panic" has been defined as an "exaggerated mass media-led social reaction to what were initially minor acts of social deviance," e.g., the mass media sensationalizing reports of street crimes, such as muggings. Steve Bruce and Steven Yearley, *The SAGE Dictionary of Sociology* (UK: SAGE, 2006) p. 203; Allan G. Johnson, *The Blackwell Dictionary of Sociology: A User's Guide to Sociological Language* (UK: Wiley-Blackwell, 2000) p. 201.

[21] A term used in Jupp, Davies and Francis, "The Features of Invisible Crime." p.5.

[22] Defined as "a type of crime in which there is no identifiable victim who has suffered harm or loss." Mark S. Davis, *The Concise Dictionary of Crime and Justice* (UK: SAGE, 2002)

[23] Cahal Milmo, Andy McSmith and Nikhil Kumar, "Revealed: UK Government let British Company Export Nerve Gas Chemicals to Syria," *The Independent*, September 1, 2013, < http://www.independent.co.uk/news/uk/politics/revealed-uk-government-let-british-company-export-nerve-gas-chemicals-to-syria-8793642.html>.

business and professional men."[24] Sutherland qualified his original definition suggesting it referred "principally to business managers and executives."[25] However, more recent definitions have been broader, for example a "heterogeneous group of offenses committed by people of relatively high status or enjoying high levels of trust, and made possible by their legitimate employment."[26] Some of the crimes considered in this broad area of study have useful but largely unexamined similarities with WMD-related trade.[27] The scholarship in this area, for example, has explored the role of regulation, compliance, and enforcement—all concepts relevant to export controls. There are also synergies because these crimes also often occur in an "organizational context."[28]

With this background in mind, this article now proceeds to explore the rational-choice model found in criminology and its application and limitations to understanding involvement in illicit trade. The following section will also explore criminology's opportunity theory as a further possible explanatory tool for understanding proliferation motivations.

Gaining from proliferation: rational-choice theories

Rational-choice theories of crime originated with the classicist view that "crime is rational, self-interested, and freely chosen behavior."[29] Those committing a crime make decisions based on various factors shaping human behavior, including "the pursuit of maximum advantage, pleasure and happiness and the avoidance of pain, unhappiness and costs."[30] Proliferation procurers are driven to varying degrees by the desire either for financial gain and/or to advance an ideological

[24] Edwin H. Sutherland, "White Collar Criminality," *American Sociological Review* Vol.5, No.1 (1940), p. 1.
[25] Sutherland quoted in Michael L. Benson and Sally S. Simpson, *Understanding White-Collar Crime: An Opportunity Perspective, 2nd Ed.* (UK: Routledge, 2015) p. 5.
[26] Steve Tombs and Dave Whyte, "White Collar Crime" in *The SAGE Dictionary of Criminology*, pp. 492-494.
[27] Export control violations have largely not featured in the literature on white-collar crime – one single exception is Bruce Zagaris, *International White Collar Crime: Cases and Materials* (Cambridge, UK: CUP, 2010) pp. 183-218.
[28] Benson and Simpson, *Understanding White-Collar Crime*, p. 67.
[29] A summary of these approaches is found in John Muncie, "Contemporary Criminology, Crime and Strategies of Crime Control" in John Muncie and David Wilson, *Student Handbook of Criminal Justice and Criminology* (UK: Routledge-Cavendish, 2004), p. 4.
[30] Ibid.

objective.[31] It is clear that involvement in proliferation can be profitable, even more than involvement in legitimate trade. Network mastermind A.Q. Khan, for example, reportedly amassed a fortune of $400 million, although much of this likely came from corrupt practices rather than his network's activities.[32] Other cases clearly highlight the large amounts of money that can change hands in illicit trade, and the potential for large profits. Chinese missile proliferator Karl Lee, for example, allegedly received $10 million in payments from Iranian missile-related entities in just two years between 2010 and 2012.[33] However, cases involving such lucrative earnings are clearly the exception rather than the rule. On a smaller scale, individual transactions may see a substantial mark-up, and brokers can take a substantial "cut" in facilitating transactions. Recent research suggests that procurement agents have worked to monetize the higher risks of illicit transactions through seeking higher commission.[34]

Proliferators can also gain in an ideological sense, e.g. through the support for a country, political ideology, or regime. A significant proportion of those involved in sourcing goods for Iran's nuclear program, for example, have been of Iranian origin or heritage, strongly suggesting that they were at least partly motivated by a desire to advance Iranian national interests. Similarly, North Korean smuggling networks often involve North Korean nationals, although whether their participation stems from love of country or coercion remains unclear. In a more specific case, the many interviews and writings of A.Q. Khan over the years have suggested that his worldview—a belief in "sharing" technology and breaking a "Western monopoly"— played a role in his activities.[35]

Potential gains—financial or otherwise—must be considered against the higher levels of risk found in illicit trade compared to those of legitimate business. Illicit business relationships may be

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[31] Stewart and Salisbury, "Non-State Actors as Proliferators."
[32] Sheila Jackson Lee, prepared statement for the Joint Hearing of Sub-Committees of the Committee on Foreign Affairs, US House of Representatives, "A.Q. Khan's Nuclear Wal-Mart: Out of Business or Under New Management?" 110th Cong., 1st sess., June 27, 2007, p. 49.
[33] William Maclean and Ben Blanchard, "Exclusive: Chinese trader accused of busting Iran missile embargo," *Reuters*, March 1, 2013, < https://www.reuters.com/article/us-china-iran-trader/exclusive-chinese-trader-accused-of-busting-iran-missile-embargo-idUSBRE9200BI20130301>.
[34] See, for example, John Park and Jim Walsh, "Stopping North Korea, Inc.: Sanctions Effectiveness and Unintended Consequences," MIT Security Studies Program Report, August 2016, p. 31, <https://www.brookings.edu/events/stopping-north-korea-inc/>.
[35] For some of Khan's statements to this effect, see Stewart and Salisbury, "Non-State Actors as Proliferators," p. 11.

shorter-term and are likely to be less stable because of potential disruption by the authorities or the instability of procurement channels.[36] An incipient illegal procurement can be exposed to suppliers, for example, if the purchaser offers to pay an unusually high price for the goods at issue or if its financial bona fides appear questionable. [37]

Systems of export controls are in place to regulate trade in sensitive technologies, with enforcement action taken against those who do not adhere. The system allows for the supplier state government to combine its secret intelligence on proliferation issues with the declared information about the potential transaction when assessing the risk of potential exports. Enforcement actions are—in theory—taken by national authorities when they uncover attempts by exporters to cheat the system or to baldly disregard licensing requirements altogether. Noncompliance can result in penalties, although these vary from country to country. [38]

As noted, according to rational-choice theories of crime, criminals are rational actors who weigh potential gains against potential risks. Raymond Paternoster and Sally Simpson of the University of Maryland provide a "rational choice theory of corporate crime" that is based on two assumptions:[39] first, that decisions to offend are based on balancing its costs and benefits; and second, that these costs and benefits are subjective perceptions. They acknowledge that in practice, there are limits to the individual's rational approach to decision making.

The criminology literature provides some insights into the longer-term costs and benefits of involvement in crime, questioning whether "crime pays." This research has sought to compare actual, estimated, and perceived financial gains and penalties from criminality, considering them next to possible earnings from legitimate employment. Studies have drawn varying conclusions,

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[36] Shiffman, *Operation Shakespeare*, p. 88.
[37] Discussion with export compliance professionals.
[38] German export control specialist Sibylle Bauer has proposed a typology of different penalties that violators could face, including administrative penalties (fines, loss of licenses, export privileges, property rights, closure of company and mandatory compliance training) and criminal penalties (fines and prison sentences). Sibylle Bauer, "WMD-Related Dual-Use Control Offenses in the European Union: Penalties and Prosecutions," Non-proliferation Paper No.30, July 2013.
[39] Raymond Paternoster and Sally Simpson, "Sanctions Threats and Appeals to Morality: Testing a Rational Choice Model of Corporate Crime," *Law & Society Review*, Vol.30, No.3 (1996) p. 553.

even when they utilized the same datasets.[40] Such concepts are even more difficult to assess in the context of WMD proliferation because many of those involved in illicit trade will be involved in legitimate trade simultaneously.

Nonetheless, at least one concept provides a measure of clarity in the discussion of proliferation. This is the concept of the "serial proliferator," a term used by officials to refer to individuals or companies—particularly those in China—involved in, and often sanctioned for, the repeated illicit procurement of WMD-related goods.[41] There is clearly some overlap between serial-proliferator behavior and serial criminality more generally, with serial offenders defined as those carrying out at least three crimes of the same type, with an element of continuity in their behavior.[42] These serial proliferators likely see gains that outweigh the growing risks and potential costs associated with their behavior. As greater and longer-term involvement in illicit activity likely raises the risk of detection, these serial proliferators often operate in jurisdictions with low or negligible risk of penalty.

Rational-choice theory and deterrence

Rational-choice theories of crime emphasize the role that deterrence can play in preventing criminal activity. Deterrence in this context is defined as "a philosophy of punishment that aims to prevent criminal activity through the development and application of effective and efficient sanctions."[43] Deterrence has two different facets: through denial—denying opportunities and making a criminal act more likely to fail—and the threat of punishment.[44] To be effective, it needs to demonstrate that "the pains and losses associated with apprehension and punishment will overshadow the possibility of criminal gain or profit."[45]

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[40] See for example James Q. Wilson and Allan Abrahamse, "Does Crime Pay?," *Justice Quarterly*, Vol.9, No.3 (September 1992), pp. 359-377; Pierre Tremblay and Carlo Morselli, "Patterns in Criminal Achievement: Wilson and Abrahamse Revisited," *Criminology*, Vol.38, No.2 (May 2000), pp. 633-657.
[41] Paula A. DeSutter, testimony before the U.S.-China Commission, "China's Record of Proliferation Activities," 108th Cong., 1st sess., July 24, 2003.
[42] Aaron Edelstein, "Rethinking Conceptual Definitions of the Criminal Career and Serial Criminality," *Trauma, Violence and Abuse*, Vol.17, No.1 (January 2016) p. 66.
[43] Eugene McLaughlin, "Deterrence," in *The SAGE Dictionary of Criminology*, p.130
[44] Lawrence Freedman, *Deterrence* (UK: Polity, 2004), p. 60.
[45] Ibid.

Deterrence is a key facet of efforts to prevent illicit trade in WMD-related goods. Nonproliferation efforts, through the export-control system or otherwise, can contribute to deterrence by denial. Those considering involvement in illicit transactions would decide not to risk it because they perceive it to be too difficult. In this respect, nonproliferation tools help raise the perceived level of difficulty. Deterrence can also operate by communicating the risk of punishment. Export-control systems and enforcement efforts contribute to both of these forms of deterrence.

Distinction is often drawn between "general" and "specific" deterrence. In the current discussion, a state's effective implementation and enforcement of export controls with respect to all commodities reinforces and adds credibility to its efforts to deter illicit trade in WMD-related goods.[46] Some definitions of general deterrence also suggest "making an example of" specific offenders to demonstrate potential costs to the wider community.[47]

"Specific deterrence" has several dimensions. It can operate post-punishment, so that "the effects of legal punishment" extend beyond the initial penalty, persuading the penalized to prevent further involvement in illicit trade.[48] Specific deterrence also includes, in relation to industry's compliance with regulations, the pre-punishment deterrent effects of inspection and audit, as well as enforcement actions, even if only a warning is given and no penalty implemented.[49] The term "implicit" deterrence has also been used to refer to the "message" sent to industry "simply by the dissemination of governmental regulations."[50]

Those writing on illicit trade prevention have suggested that, although deterrence works to a degree against many parties, it is not effective not against "determined malefactors," although more severe penalties could enhance deterrence.[51] However, in the area of export controls, there is little

[46] Mark C. Stafford & Mark Warr, "A Reconceptualization of General and Specific Deterrence," *Journal of Research in Crime and Delinquency*, Vol.30, No.2 (May 1993) p. 123.
[47] Ibid.
[48] Ibid.
[49] Neil A Gunningham, Dorothy Thornton & Robert A Kagan, "Motivating Management: Corporate Compliance in Environmental Protection," *Law & Policy*, Vol.27, No.2 (April 2005) p. 290.
[50] Ibid.
[51] See, for example, David Albright, Paul Brennan, and Andrea Scheel Stricker, "Detecting and Disrupting Illicit Nuclear Trade after A.Q. Khan," *The Washington Quarterly,* Vol.33, No.2 (April 2010),

conclusive data on the issue of deterrence. There is a consensus in the criminal-justice literature on deterrence that the certainty of punishment is more important than its severity.[52] Some research, however, suggests that the severity of punishment can have an effect, although this evidence is said to be "highly ambiguous."[53] This has been seen only in relation to a small sample of previously punished companies.[54] The importance of "celerity" or swiftness of punishment is also disputed in the literature.[55]

While there is relatively little certainty in efforts to punish those involved in WMD-related illicit trade, there is evidence that both states familiar with and those new to export-control systems place considerable weight on a punishment's severity. For example, the nine-year sentence in the prosecution of Sihai Cheng surpasses penalties in other cases for export violations involving WMD-related commodities in the United States.[56] An agent involved noted: the "lengthy sentence serves as a warning to others that stiff penalties are waiting for anyone attempting to steal or sell American technologies or trade them to foreign powers."[57] Elsewhere, Malaysia's relatively new export-control legislation includes the possibility of the death penalty for violators (although it has thus far not been invoked).[58]

Limits on a rational-choice model

p. 95; Leonard Spector and Egle Murauskaite, "Countering Nuclear Commodities Smuggling," *CNS Occasional Paper*, No.20 (March 2014) pp. 127,187.

[52] Daniel S. Nagin and Greg Pogarsky, "Integrating Celerity, Impulsivity, and Extra-legal Sanction Threats into a Model of General Deterrence: Theory and Evidence," *Criminology*, Vol.39, No.4 (November 2001), p. 865.

[53] Michael Tonry, "Learning from the Limitations of Deterrence Research," *Crime and Justice*, Vol.37, No.1 (2008), p. 279.

[54] This study explored deterrence in relation to antitrust violations. Sally Simpson and Christopher S. Koper, "Deterring Corporate Crime," *Criminology*, Vol.30, No.3 (1992) pp. 347-376.

[55] Tonry, for example suggests that there is evidence that "promptness" trumps "severity." Tonry, "Learning from the Limitations of Deterrence Research," p. 280. Nagin and Pogarsky suggest that tests of the celerity effect are scant. Nagin and Pogarsky, "Integrating Celerity, Impulsivity, and Extra-legal Sanction Threats into a Model of General Deterrence," p. 865.

[56] Cheng's case saw a sentencing enhancement from three years to nine-years.

[57] US Immigrations Customs and Enforcement, "Chinese national sentenced to 9 years for providing US goods to Iranian nuclear program," January 27, 2016, < https://www.ice.gov/news/releases/chinese-national-sentenced-9-years-providing-us-goods-iranian-nuclear-program>.

[58] Malaysian Government, "FAQ – Strategic Trade Act," undated, <http://www.matrade.gov.my/faq/708-faq-strategic-trade-act>.

The notion that individuals and entities are unlikely to become involved in illicit trade without the perceived and actual benefits outweighing the costs is valid. However, there are clear limitations to the explanatory power of rational-choice theory and the utility of deterrence. While proliferation can be profitable for individuals and entities, A.Q. Khan and Karl Lee are far from typical. Many procurement agents are running much smaller-scale operations that are less profitable. In the Cheng case, for example, $2 million of goods were transferred to the Iranian nuclear program, but Cheng received just "a few thousand dollars a year" in profits, once the dividends were distributed among thirteen co-conspirators.[59] Profits within the dual-use area are often more modest than those from other illicit trafficking activities—such as arms or narcotics trafficking—making WMD-related commodity trafficking a less than rational choice for parties willing to engage in criminal behavior in the hopes of financial gain. Nor does the rational-actor theory always sufficiently explain the behavior of more complex organizational environments, which are often not unitary actors.

While it is uncommon to accrue significant wealth from involvement in WMD-proliferation, there may be other specific financial incentives. The literature on white-collar crime suggests that individuals often become criminals to avoid bankruptcy or failure, rather than to make their fortune. Strain theory suggests that failure to achieve highly valued goals creates "strain," or pressure, to deviate from legitimate activities.[60] In a similar vein, some research has also suggested that white-collar criminals are not so much greedy as they are afraid of losing what they already have.[61]

Evidence from other industries suggests that businesses do not think or behave in a mere cost-benefit manner. Businesses are not "amoral calculators," purely interested in maximizing profit.[62] Other political, social, environmental, cultural, and ideological factors also play a role in their outlook and decision making. Moreover, it is neither realistic nor possible to make decisions purely

[59] Arnold, "A Resilience Framework for Understanding Illicit Nuclear Procurement Networks."
[60] Benson and Simpson, *Understanding White-Collar Crime*, p. 68.
[61] Ibid, p. 71-72.
[62] Kagan, Robert A. and John Scholz, "The 'Criminology of the Corporation' and Regulatory Enforcement Strategies," in Keith Hawkins and John Thomas eds. *Enforcing Regulation* (Boston: Kluwer Nijhoff Publishing, 1984), pp. 67-95.

based on costs and benefits. The decisions of proliferators suffer from limited information—their view of the risks, for example, is incomplete. Simon has introduced the concept of "bounded" or "limited" rationality, which holds that the lack of complete knowledge and difficulties anticipating consequences and outcomes can limit the rational actions of individuals and organizations.[63]

The social environment can also influence decisions. The concept of "differential association," for example, suggests that a person's associates shape their views on what is appropriate behavior. Criminal behavior, according to this concept, is "learned in association with those who define such criminal behavior favorably and in isolation from those who define it unfavorably."[64] This could apply, for instance, to cases where one individual persuades another to join an illicit business venture.

Another limitation on the rational-choice model is the difficulty applying it to large organizations. Even in cases where a company has a clearly stated approach to export compliance, employees do not always abide by it. For example, there have been cases of salesmen continuing to conduct illicit transactions against the policy proposed by the company leadership, such as what allegedly happened in the mid-2000s in a large Chinese state-owned enterprise.[65] While the rational-actor model may have value in explaining the actions of the leadership and the salesman in this case, approaches drawing on organizational theory may have more value in explaining the divergence at different levels in the organization, and the lack of a compliance culture.[66]

A further limitation on the rational-choice model is the involvement of "unwitting proliferators"—either innocent or ignorant— who are unaware their goods contributed to a WMD program.[67] Their involvement was not consciously chosen but rather resulted from a failure to implement an ICP or "beyond-compliance practices," such as terminating all commerce with states of concern. In this

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[63] Herbert A. Simon, *Administrative Behavior,* 4th edition (US: Free Press, 1997), p. 93.
[64] Benson and Simpson, *Understanding White-Collar Crime*, p. 55.
[65] A salesman responsible for the firm's trade with Iran allegedly was "angry to see his bonuses disappearing", and was "causing lots of trouble" for the firm before the company's president intervened. US Embassy Beijing, "NORINCO claims to be forgoing sales to Iran," No.07BEIJING2896, April 30, 2007, <https://wikileaks.org/plusd/cables/07BEIJING2896_a.html>.
[66] See for example Edgar H. Schein, *Organizational Culture and Leadership,* 4th Edition (US: Jossey-Bass, 2010)
[67] Stewart and Salisbury, "Non-State Actors as Proliferators," p. 14.

respect, proliferation is the result of an individual or organization's negligence, defined generally as the "failure to exercise a degree of care that a person of ordinary prudence (a reasonable man) would exercise under the same circumstances" and "carelessness amounting to the culpable breach of duty."[68]

Deterrence reconsidered

There are limited prospects for deterring the involvement of individuals and entities in illicit trade. This is not only because deterrence is ineffective against "determined malfeasants," as suggested in existing studies, but also because the rational-choice model is not ubiquitously relevant, and because national authorities have difficulty punishing those involved in illicit trade and communicating this to others who might choose this path.

As noted above, the criminology literature highlights the importance of punishment certainty in successful deterrence. Each stage required for the effective enforcement of strategic trade controls—detection, investigation, and prosecution—has its own distinct challenges. Investigating cases of illicit trade can take years, involving significant undercover work and cooperation with partners overseas.[69] This can be both difficult and expensive. Other challenges facing these investigations include questions over their legal basis, problems with interagency and intergovernment cooperation, and insufficient capacity of agencies tasked with pursuing these efforts.[70]

Once illicit trade has been detected and investigated, prosecution presents further challenges. Winning a criminal case can involve overcoming high evidential standards and proving criminal intent beyond reasonable doubt. There is also often a trade-off as to whether to prosecute offenders, or to allow illicit networks to continue to function. Allowing networks to carry on with their activities can allow enforcement agencies to gather more damning evidence, or to continue to collect intelligence about procurement architecture and the WMD program it is supplying.

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[68] Steven H. Gifis, *Dictionary of legal terms: a simplified guide to the language of law* (N.Y.: Barron's Educational Series, 2008) p. 337; Jonathon Law ed. *A Dictionary of Law* (Oxford, UK: OUP, 2015) p. 413

[69] Shiffman, *Operation Shakespeare*, p. 57.

[70] Bauer, "WMD-Related Dual-Use Control Offenses in the European Union."

Enforcement action can also have political dimensions. Considering the difficulties involved in pursuing export-control cases, some law-enforcement officials may prefer "to focus on traditional cases, things like drugs, bank robberies, illegal immigration," where it is easier to make progress and "buoy the statistics that make everyone in a bureaucracy look good."[71] In one particularly thorny politicized case, the US released several prominent convicted Iranian procurement agents from prison as part of a prisoner swap, and dropped the charges against several other fugitives, as the JCPOA implementation day passed.[72] As a result, US counterproliferation enforcement efforts have allegedly faced significant uncertainties since the conclusion of the Iran nuclear deal.[73]

As with cases of white-collar crime, prosecuting export-control violators is more complicated than prosecuting street criminals, and they often face similar challenges. [74] Crimes such as murder and robbery, for example, are more obviously illegal, while the nuances of export-control legislation—such as complex technical specifications and international supply chains—further complicate prosecutions. As scholars have noted, "as a means of controlling white-collar and corporate crime, the criminal justice system is difficult to use and has not been exceedingly successful."[75]

Moreover, proliferation prosecution rarely results in sufficiently severe punishment; offenders "continue to receive low penalties even when violators are convicted."[76] The fate of the Khan network, for example, led one commentator to describe WMD proliferation as "the crime with no punishment."[77] While many members of the network served some time in prison or under house arrest, most members of the network evaded serious penalty due to the complexity of investigating

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[71] Shiffman, *Operation Shakespeare*, p. 57.
[72] Josh Meyer, "Obama's Hidden Iran Deal Giveaway," *Politico*, April 24, 2017, <https://www.politico.com/story/2017/04/24/obama-iran-nuclear-deal-prisoner-release-236966>.
[73] Ibid.
[74] Robert Baldwin, Martin Cave and Martin Lodge, *Understanding Regulation,* 2nd Edition (Oxford, UK: OUP, 2013) p. 228.
[75] Benson and Simpson, *Understanding White-Collar Crime*, p. 237.
[76] Albright, Brennan and Scheel Stricker, "Detecting and Disrupting Illicit Nuclear Trade after A.Q. Khan," p. 96.
[77] Eben Harrell, "Nuclear Proliferation: The Crime with No Punishment?," *Time*, September 16, 2011, <http://content.time.com/time/world/article/0,8599,2092585,00.html>.

their activities, various shortfalls in national export-control legislation, and difficulties in obtaining mutual legal assistance from foreign governments and the extradition of key parties.

The location of individuals and companies is also an important factor that can limit the prospects for deterrence. Entities based in territories with weak export controls and no appropriate extradition treaties with countries active in nonproliferation—in particular, the United States—are not threatened by the risk of punishment. The difficulty in gaining cooperation from foreign governments in prosecuting cases of illicit trade has led the US to impose nonproliferation sanctions against proliferators overseas.[78] These sanctions are highly targeted, being focused on specific individuals and entities which intelligence suggests have been involved in proliferation-related transactions.

The implications of entities being designated – and thus the deterrent effect – varies according to the sanctions legislation used. However, being designated by the US government can have extra-legal consequences, with large financial institutions and other businesses around the world frequently screening potential business partners against US lists. Ensuring that these measures punish those that they are being implemented against is challenging because entities frequently use aliases or establish front companies with different names to negate the effects of these designations.

The deterrent effect also likely depends on the nature of the entity in question. US-targeted sanctions imposed on proliferators based in jurisdictions where export-control enforcement is problematic, are an example. The threat of penalty is more likely to have an effect on larger businesses with legitimate business interests and more to lose from fines or asset freezes than on middlemen well-versed in establishing new front companies.[79] Similarly, businesses with well-established brands have more to lose than anonymous middlemen and brokers.

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[78] See Richard H. Speier, Brian G. Chow and S. Rae Starr, *Nonproliferation Sanctions* (CA, US: RAND Coroporation, 2001).

[79] Compare for example the cases of large Chinese state-owned enterprise NORINCO, and Karl Lee. Center for Nonproliferation Studies, "NORINCO delegation visits United States to discuss export control issues and sanctions; talks with CNS researchers," *International Export Control Observer*, Vol.7, (2006), p. 21–23. Daniel Salisbury and Ian J. Stewart, "Li Fang Wei (Karl Lee)," *Project Alpha Proliferation Case Study Series*, May 19, 2014.

While the prospects for deterrence are thus limited, evidence suggests that fear of penalties can work alongside other factors to drive compliance efforts by legitimate industry. Such fear can cause businesses to put in place an ICP or beyond-compliance practices to reduce the risk of inadvertent transfers that could trigger penalties. Such deterrence would likely have a widespread impact, given the clear majority of legitimate businesses are more likely to be law-abiding than knowingly seeking to supply WMD programs.

The threat of further penalties on firms that have already been punished—perhaps a form of specific deterrence—has been shown to lead these companies to establish compliance programs.[80] Experience conducting outreach to industry in the United Kingdom suggests that specific deterrence through inspection may have utility. Those firms most at risk of being targeted by proliferation procurers for dual-use goods have often had some kind of contact with the authorities (although usually not resulting in noncompliance finding) and therefore often have more developed ICPs.[81] General deterrence also has an important role to play, with the risk of "blacklisting" working as a significant compliance driver for firms.[82] It should be noted, however, that the threat of penalties alone has limited explanatory value for why businesses go "beyond-compliance."[83]

"Extra-legal" sanctions or consequences can also be important. These include reputational risks, with the perceived financial value of reputation viewed as particularly important.[84] They also can include other factors such as "fear of peer disapproval, embarrassment or social stigma."[85] Beyond

[80] See for example the case of NORINCO. Center for Nonproliferation Studies, "NORINCO delegation visits United States to discuss export control issues and sanctions."
[81] Experiences of the author conducting outreach to UK industry 2011-2014.
[82] See Salisbury, "Trade Controls and Nonproliferation," p. 541.
[83] Sally S. Simpson and Melissa Rorie, "Motivating Compliance: Economic and Material Motives for Compliance" in Christine Parker and Vibeke Lehmann Nielsen eds. *Explaining Compliance: Business Responses to Regulation* (Cheltenham, UK: Edward Elgar, 2011), pp. 59-77.
[84] Judith Van Erp, "Reputational Sanctions in Private and Public Regulation", *Erasmus Law Review*, Vol.1, No.5 (2008), pp. 145-162.
[85] Nagin and Pogarsky, "Integrating Celerity, Impulsivity, and Extra-legal Sanction Threats into a Model of General Deterrence," p. 873.

fear, moral factors can also be important, especially in driving beyond-compliance behavior.[86] The criminology literature notes that these can be as great a deterrent as the legal consequences.[87]

In sum, it is clear that there are a good number of limitations on the explanatory power of the rational actor model. While entities are unlikely to become involved in illicit trade unless they believe the benefits outweigh the costs, such a model is simplistic. Proliferation is not always hugely profitable, and other social, moral and organizational factors also have explanatory value. The concept of deterrence through threat of punishment, a key tenant of efforts to prevent illicit trade, certainly has some value. However, the large number of barriers to ensuring that all those involved in illicit trade are punished means that there are challenges in putting this concept into practice.

Framing proliferation opportunities

Further insights for proliferation behavior can be gleaned by employing opportunity theory, a criminological approach that views "crime as a function of the characteristics of situations that offer the opportunity, to those inclined to take it, to benefit from an illegal act."[88] Like rational-choice theory, it views humans as rational beings, but complements this insight with the notion that a specific opportunity for a criminal act must emerge.[89] The opportunity, which adds a situation-specific dimension to the explanation of crime, arises from a combination of factors including a time, location, target, and lack of effective guardians.[90] Opportunities can either present themselves or be actively created.[91]

Opportunity-based models have been more frequently applied to street crime than to business crime, though Michael Benson of the University of Cincinnati and Sally Simpson of the University

[86] Salisbury, "Trade Controls and Nonproliferation," p. 544.
[87] Nagin and Pogarsky, "Integrating Celerity, Impulsivity, and Extra-legal Sanction Threats into a Model of General Deterrence," p. 865.
[88] Clive Hollin, "Opportunity Theory" in *The SAGE Dictionary of Criminology*, p. 298.
[89] Muncie, "Contemporary Criminology, Crime and Strategies of Crime Control," p. 13
[90] Hollin, "Opportunity Theory," p. 298.
[91] David O. Friedrichs, *Trusted Criminals: White Collar Crime in Contemporary Society* (US: Cengage Learning, 2009) p. 239.

of Maryland adapted the model to apply to white-collar crime, noting that the "opportunity arises out of some sort of legitimate business activity or process."[92] More specifically, white-collar criminal opportunities involve "an illegitimate process that is parasitical" on "a legitimate process that is typically followed in the world of business or government."[93] In proliferation cases, the process on which the "parasitic" illicit trade feeds is legitimate trade in sensitive WMD-related technologies, dual-use goods that are frequently legitimately traded for non-WMD uses.

A criminal opportunity is based on a specific situation. The target could either refer to the proliferation-sensitive technology that the procurement agent is seeking to acquire or the company from which he is seeking to acquire it. The concept of "target attractiveness" could be applied to WMD proliferation.[94] For example, the technology could be attractive because it is needed by a WMD program, or because it falls below the control thresholds and will not invoke heightened scrutiny by industry or government. A company could be an attractive target because it holds the required technology, is located in a state with weak export controls, or has substandard compliance efforts. The absence of effective guardians in a proliferation opportunity relates to the proliferator's belief that the activity will not be discovered by the targeted supplier or by export controllers, customs officials, or intelligence services. The opportunity model—like rational-choice based models—also assumes some level of calculus by those involved.

The broad techniques used in WMD-related illicit trade are similar to those used by white-collar criminals: deception, abuse of trust, and concealment and conspiracy.[95] The medium for a business inquiry in the present day usually takes the form of an email, asking whether a company can provide goods of a certain specification or to request a quote.[96] The supplier's response to this email will then shape the opportunity and the chances of the proliferator's success.

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[92] Benson and Simpson, *Understanding White-Collar Crime*, p. 254.
[93] Ibid.
[94] Hollin, "Opportunity Theory," p. 299.
[95] Benson and Simpson, *Understanding White-Collar Crime*, p. 102.
[96] Daniel Salisbury and David Lowrie, "Targeted: A Case in Iranian Illicit Missile Procurement," *Bulletin of the Atomic Scientists*, Vol.69, No.3 (May –June 2013), pp. 23-30.

Because proliferation opportunities often involve deception on behalf of the procurement agent, the concept of trust is important to these illicit transactions; that is, the target must trust the procurement agent sufficiently to complete the sale, either resulting from a pre-existing relationship or because the agent successfully misrepresents himself as a trustworthy purchaser.[97] Sutherland, who first defined white-collar crime, spoke of it as a "violation of delegated or implied trust."[98] Others have also placed trust as central to these types of opportunities and crimes, including in the context of nuclear smuggling. [99]

The lens of opportunity theory explains serial criminality by a series of opportunities that either present themselves or are sought by the malevolent actor. Repeat business is normal and desirable in the commercial world. In the same manner, a history of successful transactions is likely to lead to further opportunities in illicit trade, especially important in the acquisition of goods for WMD programs, where procurement agents are likely to have fewer options to procure goods of high technical specification because of their limited manufacturing base.

Situational crime prevention: reducing proliferation opportunities

Proponents of opportunity theories of crime have developed Situational Crime Prevention (SCP) measures to address specific types of criminal opportunities.[100] SCP "intervenes in those causes which the offender encounters, or seeks out, in the immediate circumstances of the criminal event."[101] SCP measures are "directed at highly specific forms of crime."[102] In burglary, for example, an SCP relates specifically to a certain type of goods, e.g. theft of electronic goods or cars. SCPs also typically "involve the management, design, or manipulation of the immediate

[97] Anderson argues that there is at least one "point of deception" in each incidence of illicit procurement. This is "the point at which the details of the true end use or end user of the goods… becomes obfuscated." Glenn Anderson, "Points of Deception: Exploring How Proliferators Evade Controls to Obtain Dual-use Goods," *Strategic Trade Review*, Vol.2, No.2 (Spring 2015) pp. 4-24.
[98] Sutherland, "White Collar Criminality."
[99] Friedrichs, *Trusted Criminals*. See also Egle Murauskaite, "The Trust Paradox in Nuclear Smuggling," *Nonproliferation Review*, Vol.22, No.3-4 (September 2015) pp. 321-339.
[100] R.V. Clarke, "Introduction" in R.V. Clarke ed. *Situational Crime Prevention: Successful Case Studies* (NY, US: Harrow and Heston)
[101] Paul Ekblom, "Situational Crime Prevention," in *The SAGE Dictionary of Criminology,* p. 411-12.
[102] R.V. Clarke, "Introduction," p. 4.

environment in as systematic and permanent way as possible," and seek to "make crime more difficult and risky, or less rewarding and excusable."[103] SCPs arguably provide a useful lens through which to consider nonproliferation measures; although a combination of deterrence and SCP measures are required to prevent illicit trade, enhancement of SCPs has and will continue to be beneficial for nonproliferation.

Proliferation experts—who have the greatest understanding of the specific opportunities for proliferation—are better suited than criminologists to develop appropriate SCPs.[104] This includes different nonproliferation actors at different levels responding to developments in proliferation and illicit trade. International organizations, governments, and industry can develop SCP measures to make illicit transactions more difficult. SCPs can modify the proliferation opportunity, increase the effort required to commit the offense, raise the risk of detection, reduce the rewards, and make it more difficult to justify or excuse.[105]

The levels of awareness of illicit trade among industry actors are important in reducing proliferation opportunities. Efforts have been made to engage industry on these issues and raise the profile of illicit trade. Industry outreach has been conducted in many countries by international organizations, national governments, nongovernmental organizations (NGOs), and academia. Some of these efforts focused on specific industrial sectors that are frequently targeted for their WMD-related goods, whereas other efforts have focused on broader exporter communities.

Besides general awareness raising, more specific tools have been developed to supplement export-control systems and allow exporters to better judge the legitimacy of potential transactions. These tools, in some sense, address the "trust paradox," namely that being less trusting could reduce the overall possibility of being a victim of crime, but that it may also result in a decline in legitimate business.[106] These measures provide a structured means for businesses to better judge the risks in

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[103] Ibid.
[104] Ibid.
[105] Michael L. Benson and Tamara D. Madensen, "Situational Crime Prevention and White-Collar Crime," in Henry N. Pontell and Gilbert L. Geis eds. *International Handbook of White-Collar and Corporate Crime* (US: Springer, 2007) pp. 609-626.
[106] Friedrichs, *Trusted Criminals*, p. 9.

prospective transactions and see through a proliferator's deceptive behavior. This includes making sure that exporters request full end-use and end-user information and conduct due-diligence screening of prospective customers. Governments and NGOs have also developed lists of red flags to help exporters identify suspicious inquiries.[107]

Exporters can play a proactive role in nonproliferation by informing governments of suspicious inquiries. This is becoming increasingly normalized in the US defense industry, with almost 46,000 reports logged by US defense companies in 2015.[108] These efforts feed into counterproliferation efforts and inform industry of ongoing and emerging risks. Through such actions and increased use of open-source intelligence techniques in due diligence, savvy exporters can become increasingly aware of the types of risks specific to their businesses. Key to the success of all these SCP measures is industry's awareness—not merely of the relevant regulations and potential costs, but also of the need to go beyond compliance and the available tools to help entities avoid involvement in illicit trade.

Conclusion: toward a norm against illicit trade

With the increasing criminalization of illicit trade, the literature on criminology can yield important conceptual insights. Indeed it is surprising, given this increasing criminalization, that the literature on WMD proliferation has drawn so infrequently on the literature on crime and justice, in general, and white-collar crime and business crime, more specifically. This is still the case over a decade after UNSCR 1540 took steps to universalize the criminalization of illicit WMD-related trade. The framework outlined above seeks to inform nonproliferation efforts by providing a novel approach focused at the transactional-level, a thus far under-considered dimension.

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[107] US Bureau of Industry and Security, "Red Flag Indicators," undated, <https://www.bis.doc.gov/index.php/enforcement/oee/compliance/23-compliance-a-training/51-red-flag-indicators>.

[108] Anthony Capaccio, "Defense Contractors Credited for Finding a Russian Export Scheme," *Bloomberg*, October 31, 2016, <http://www.bloomberg.com/news/articles/2016-10-31/defense-contractors-credited-for-finding-a-russian-export-scheme>.

This initial survey provides several insights that could help enhance efforts to counter illicit trade, as well as points to avenues for further research, particularly as regards deterrence. Both quantitative studies, using open-source datasets of prosecutions, and qualitative analysis of case studies would greatly enhance our understanding. Since the criminology literature suggests that penalty *certainty* is more important than its severity, deterrence efficacy can be enhanced when states strengthen their ability to enforce controls. This work should be conducted alongside efforts ensuring that well-crafted export control laws are in place. Despite the limitations of deterrence and the rational-choice model, the threat of criminal sanction has been shown to have value, for example, in impelling firms to establish compliance programs. Efforts to increase the extra-legal costs of involvement could also work to enhance the deterrent effect.

The limitations of the rational-choice model can be overcome by considering the specifics of individual cases. Opportunity theory provides a good starting point. Further research into proliferation opportunities could examine the specific social circumstances— beyond a focus on costs and benefits—that resulted in perpetrators turning to WMD-related illicit trade. The development and spread of nonproliferation SCP measures needs to continue. This includes generating more specific understandings of the proliferation risks in different industrial sectors, with particular emphasis on what beyond-compliance measures can help companies become proliferation resistant. Other new tools and training to help firms overcome the trust paradox can also be important, including helping industries learn how to benefit from new open-source tools and techniques for due diligence. While these measures are not a silver bullet against determined proliferators will can still operate in some jurisdictions with impunity, they will ensure that the private sectors in more advanced industrial countries do not contribute unwittingly to WMD programs.

More broadly, the key to the success of both sets of nonproliferation tools—deterrence and SCP measures—is awareness of proliferation, export-control legislation, and potential costs. Within the toolbox of “nonproliferation norms,” efforts to further develop and publicize a norm against illicit

trade could be productive.[109] This would help raise awareness of the issue, reinforce extra-legal consequences, and help extract illicit trade from the realms of "invisible crime."

[109] Maria Rost Rublee, *Nonproliferation Norms: Why States Choose Nuclear Restraint* (Athens, GA: University of Georgia Press, 2009).